

WHAT IS CLAIMED IS:

1. A pressure sensor comprising:
a diaphragm for sealing liquid,
wherein the diaphragm includes a plurality of convexities,
which are disposed concentrically on the diaphragm,
wherein each convexity has a circular arc cross section in
a radial direction and has a ring shape,

wherein each convexity has a length of the circular arc
representing as L, a height of the convexity representing as H, a
width of the convexity in the radial direction representing as W,
and a pitch between two adjacent convexities in the radial direction
representing as P,

wherein the diaphragm has an effective radius representing
as R, and a distance between a center of the diaphragm and a center
of the convexity disposed utmost outside of the diaphragm
representing as r_0 , the effective radius of the diaphragm being
defined as a radius of a part of the diaphragm applied with pressure,

wherein the sensor has a configuration factor representing
as α , which is defined as:

$$\alpha = \left(\frac{L}{H}\right) \times \left(\frac{L}{W}\right) / \frac{P}{R} \times \left(\frac{r_0}{R}\right), \text{ and}$$

wherein the configuration factor is in a range between 2.5
and 3.5.

2. The sensor according to claim 1,
wherein the diaphragm has two convexities.

3. The sensor according to claim 1,
wherein the diaphragm is made of metal, and
wherein the liquid is made of oil.

4. The sensor according to claim 1,
wherein the height of the convexity is in a range between
0.16mm and 0.28mm,
wherein the width of the convexity is in a range between 1.3mm
and 1.5mm, and
wherein the convexity is disposed outside of half of the
effective radius of the diaphragm.

5. The sensor according to claim 1,
wherein the effective radius of the diaphragm is about 9.3mm,
and
wherein the sensor is used under comparatively low pressure.

6. The sensor according to claim 1,
wherein the sensor is used for detecting emission gas pressure
of a diesel-powered vehicle.